Docket No.: 21058/0206453-US0
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Letters Patent of:
Mineo Yamakawa et al.

Patent No.: 7,381,529

Issued: June 3, 2008

For: METHODS AND COMPOSITIONS FOR DETECTING NUCLEIC ACIDS USING SCANNING PROBE MICROSCOPY AND NANOCODES

REQUEST FOR CERTIFICATE OF CORRECTION
PURSUANT TO 37 CFR 1.323 AND 1.322

Attention: Certificate of Correction Branch
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Upon reviewing the above-identified patent, Patentee noted typographical errors which should be corrected. A listing of the errors to be corrected is attached.

The typographical errors marked with an "A" on the attached list are found in the application as filed by applicant. Payment in the amount of $100.00 covering the fee set forth in 1.20(a) is enclosed.

The typographical errors marked with a "P" on the attached list are not in the application as filed by applicant. Also given on the attached list are the documents from the file history of the subject patent where the correct data can be found.

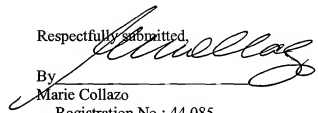
The errors now sought to be corrected are inadvertent typographical errors the correction of which does not involve new matter or require reexamination.

Transmitted herewith is a proposed Certificate of Correction effecting such corrections. Patentee respectfully solicits the granting of the requested Certificate of Correction.

The Commissioner is authorized to charge any deficiency of up to $300.00 or credit any excess in this fee to Deposit Account No. 04-0100.

Dated: June 25, 2008

Respectfully submitted,



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UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,381,529 Page 1 of 1

APPLICATION NO.: 10/750,515

ISSUE DATE : Dec. 4, 2007

INVENTOR(S) : Yamakawa et al.

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

On the face page, in field (56), under "Other Publications", in column 2, line 3, delete "Fingerpoints" and insert - - Fingerprints - -, therefor.

In column 41, line 7, in Claim 3, delete "nucileotide" and insert - - nucleotide - -, therefor.

In column 42, line 6, in Claim 11, delete "tuiuielirig" and insert - - tunneling - -, therefor.

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Note: **P** = USPTO Error **A** = Applicant Error

US Serial No.: **10/750,515** US Patent No.: **US 7,381,529 B2** Issue Date: **Jun. 3, 2008**

Title: **METHODS AND COMPOSITIONS FOR DETECTING NUCLEIC ACIDS USING SCANNING PROBE MICROSCOPY AND NANOCODES**

S. No.	P/A	Original		Issued Patent		Description of Error
		Page	Line	Column	Line	
1	A	Sheet 2 of 2 List of References cited by applicant and considered by examiner (12/23/2005)	Entry 2 Line 1 (Non Patent Literature Documents)	First Page Col. 2 (Other Publications)	3	Delete "Fingerpoints" and insert - - Fingerprints - -, therefor.
2	P	Page 5 Claims (01/25/2008)	Claim 10 Line 2	41	7	In Claim 3, delete "nucileotide" and insert - - nucleotide - -, therefor.
3	P	Page 4 Claims (01/25/2008)	Claim 9 Line 6	42	6	In Claim 11, delete "tuiuielirig" and insert - - tunneling - -, therefor.

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(12) **United States Patent**
Yamakawa et al.

(10) **Patent No.: US 7,381,529 B2**
(45) **Date of Patent: Jun. 3, 2008**

(54) **METHODS AND COMPOSITIONS FOR DETECTING NUCLEIC ACIDS USING SCANNING PROBE MICROSCOPY AND NANOCODES**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 282 days.

(21) Appl. No.: **10/750,515**

(22) Filed: **Dec. 31, 2003**

(65) **Prior Publication Data**

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(51) **Int. Cl.**
C12Q 1/68 (2006.01)

(52) **U.S. Cl.** **435/6**

(58) **Field of Classification Search** ..... None
See application file for complete search history.

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(57) **ABSTRACT**

A method for determining a nucleotide sequence of a nucleic acid is provided that includes contacting the nucleic acid with a series of labeled oligonucleotides for binding to the nucleic acid, wherein each labeled oligonucleotide includes a known nucleotide sequence and a molecular nanocode. The nanocode of an isolated labeled oligonucleotides that binds to the nucleic acid is then detected using SPM. Nanocodes of the present invention in certain aspects include detectable features beyond the arrangement of tags that encode information about the barcoded object, which assist in detecting the tags that encode information about the barcoded object. The detectable features include structures of a nanocode or associated with a nanocode, referred to herein as detectable feature tags, for error checking/error-correction, encryption, and data reduction/compression.

19 Claims, 5 Drawing Sheets

2. The method of claim 1, wherein the one or more coded oligonucleotide probes comprise permutations of a linear order of nucleic acid residues, which linear order represents all possible complementary sequences for a particular length of oligonucleotide.

3. The method of claim 2, further comprising determining the nucleotide sequences of oligonucleotides that bind to the target nucleic acid.

4. The method of claim 3, further comprising determining a nucleotide sequence of the target nucleic acid from the sequences of oligonucleotides that bind to the target nucleic acid.

5. The method of claim 1, wherein the nanocode is selected from the group consisting of carbon nanotubes, fullerenes, submicrometer metallic barcodes, nanoparticles and quantum dots.

6. The method of claim 1, wherein the nucleic acid is attached to a surface.

7. The method of claim 6, further comprising ligating adjacent coded probes that are hybridized to the nucleic acid.

8. The method of claim 7, further comprising separating ligated coded probes from the target nucleic acid and non-ligated coded probes.

9. The method of claim 8, wherein the ligated coded probes form reading frames.

10. The method of claim 1, further comprising aligning the coded probes on a surface by molecular combing.

11. The method of claim 1, wherein the scanning probe microscopy is atomic force microscopy, scanning tunneling microscopy, lateral force microscopy, chemical force microscopy, force modulation imaging, magnetic force microscopy, high frequency magnetic force microscopy, magnetoresistive sensitivity mapping, electric force microscopy, scanning capacitance microscopy, scanning spreading resistance microscopy, tuiuieliriy atomic force microscopy or conductive atomic force microscopy.

12. The method of claim 1, further comprising identifying the target nucleic acid from the coded probes that bind to the target nucleic acid.

13. The method of claim 1, wherein two or more target nucleic acids are present in a sample.

14. The method of claim 1, wherein at least two target nucleic acids are contacted in the sample at the same time.

15. The method of claim 1, wherein the feature tag is provided by a detectable feature tag associated with the nanocode.

16. The method of claim 15 wherein the feature tag comprises a start tag.

17. The method of claim 1, further comprising transforming the molecular nanocode to form a decompressed nanocode.

18. The method of claim 1, wherein the feature tag comprises a barcode segment.

19. The method of claim 1, wherein the feature tag comprises a header segment and an encoding segment.

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